

WHAT IS CLAIMED IS:

1. A protein microarray element comprising:
 - a) a support;
 - b) a gelatin layer containing functional groups capable of binding biological probes; and interposed between the support and the gelatin layer
 - c) an adhesive interlayer layer capable of maintaining contact with the support and with the gelatin layer.
2. The microarray of claim 1 wherein the support is organic or inorganic.
3. The microarray of claim 1 wherein the support is glass or fused silica.
4. The microarray of claim 1 wherein the support is between 0.1 and 5.0 mm in thickness.
5. The microarray of claim 1 wherein the support is between 0.5 and 2.0 mm in thickness.
6. The microarray of claim 1 wherein the adhesive interlayer comprises proteins, protein derivatives, gelatin, gelatin derivatives, or hydrophilic water-permeable colloids.
7. The microarray of claim 1 wherein the adhesive interlayer layer comprises synthetic polymeric peptizers, carriers, or binders.
8. The microarray of claim 1 wherein the adhesive interlayer layer comprises poly(vinyl alcohol), poly(vinyl lactams), acrylamide polymers, polyvinyl acetals, polymers of alkyl and sulfoalkyl acrylates and methacrylates, hydrolyzed polyvinyl acetates, polyamides, polyvinyl pyridine, or methacrylamide copolymers.

9. The microarray of claim 1 wherein the adhesive interlayer layer comprises gelatin.

10. The microarray of claim 9 wherein an organic solvent, or a mixture of solvents is combined with the gelatin.

11. The microarray of claim 10 wherein the organic solvent or mixture of solvents includes acetone, alcohol, ethyl acetate, methylene chloride, ether, or a mixture thereof.

12. The microarray of claim 9 wherein a crosslinking agent, a silicate salt, or a dispersing aid is combined with the gelatin.

13. The microarray of claim 9 wherein the gelatin is alkaline pretreated.

14. The microarray of claim 9 wherein the gelatin is pig gelatin or fish gelatin.

15. The microarray of claim 9 wherein the gelatin coverage is 0.2 to 100 grams per square meter.

16. The microarray of claim 9 wherein the gelatin coverage is 10 to 50 grams.

17. A protein microarray element comprising:

a) a support;

b) on said support is disposed an adhesive layer capable of maintaining contact with the support; and with

c) a gelatin layer that bears a trifunctional compound A-L-B; wherein A is a functional group capable of interacting with the gelatin; L is a linking group capable of interacting with A and with B; and B is a functional group capable of interacting with a protein capture agent; wherein A may be the same or different from B.

18. The microarray of claim 17 wherein the trifunctional compound A-L-B is a polymer scaffold affixed to said gelatin layer.

19. The microarray of claim 17 wherein the polymer in the polymer scaffold is rich in reactive units capable of interacting with proteins.

20. The microarray of claim 17 wherein the interaction between the gelatin layer and A is a physical binding or a chemical reaction.

21. The microarray of claim 17 wherein either A or B, or both, is aldehyde, epoxy, hydrazide, vinyl sulfone, succinimidyl ester, carbodiimide, maleimide, dithio, iodoacetyl, isocyanate, isothiocyanate, or aziridine.

22. The microarray of claim 17 wherein B is an affinity tag capable of interacting non-covalently with a protein capture agent that is to be immobilized onto the substrate.

23. A method of making a gelatin-based substrate for fabricating protein arrays, the method comprising the steps of:

- providing a support;
- coating on the support an adhesion layer;
- coating, on said adhesion layer, a layer of gelatin containing a trifunctional compound A-L-B; wherein A is a functional group capable of interacting with the gelatin; L is a linking group capable of interacting with A and

with B; and B is a functional group capable of interacting with a protein capture agent;

wherein A may be the same or different from B.

24. The method of claim 23 wherein the trifunctional compound ALB is affixed while coating the gelatin on the adhesion layer.

25. The method of claim 23 wherein the trifunctional compound ALB is affixed after coating the gelatin on the adhesion layer.

26. The method of claim 23 wherein the protein capture agent is antibody, protein scaffold, peptide, nucleic acid ligand, or a molecular imprinting polymer.

27. The method of claim 23 wherein the polymer in the polymer scaffold is rich in reactive units that are capable of immobilizing proteins.